58. (New) The system of claim 52 wherein the cooling apparatus includes a first fan which is disposed outside of the laser chamber, and positioned to cool the load.

59. (New) The system of claim 58 further including a second fan disposed in the laser chamber for circulating laser gas in the laser chamber.

60. (New) The system of claim 52 wherein the load is encapsulated volume with circulating oil.

REMARKS

The Office Action states that new corrected drawings are required. Submitted herewith is a copy new formal drawings which are being submitted to the Draftsperson.

The Office Action rejects claims 1-49 "under 35 USC §112, second paragraph as being indefinite, and confusing for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." Office Action, p. 2. The Office Action then goes on to specifically address claim 1, stating in part that "relationships between the elements are unclear and there is no structure and insufficient relationship such as lack of (pulse generator, type of capacitance in relation with the Ground . . .) to conform a *discharge circuit for pulsed gas laser system,* which renders the claims vague and indefinite. In addition it is not patentable by just claiming RC or RCL circuit layout in a variety of configuration, because it is well known in the art, see attached reference Fundamentals of Electrical Engineering, 1985, p286, 289." Office Action, p. 3 (emphasis in original).

It is respectfully submitted that as amended claim 1 clarifies the relationship between the elements of the claim. Specifically, claim 1 has been amended to clarify that that the capacitance and the load are coupled to a first electrode, and the relationship is further clarified in that the capacitance is recited to store a charge that is discharged through the electrodes, and the load dissipates energy that is transmitted through it as a result of a discharge in the gas discharge area.

Further the Office Action rejects claim 1, as well as other independent claims 16, 21, 25, 37 and 38, under 35 USC §102(b), stating in part:

> "With respect to claims 1-4, 10, 15, 16, 21, 25-28, 36, 37 and 38 Myers et al. (US 6128323) shows in figures 6, 10, a narrow-band high rep rate excimer laser with a pair of electrodes (F 8b: 83, 84), with a peaking capacitance coupled to first electrode of said pair electrode configured to store charge (F 8b: 82, Cp), and a load coupled between first electrode and said capacitance (F 8b: diode, resistor, Lp) and ground. Since claims 1, 16, 21, 25, 37 and 38 recite the same or identical elements/limitations it is inherent to use Myers et al. (US 6128323) to recite the same or identical elements/limitation it is inherent to use Myers et al. (US 61283232) to recite the method of manufacturing optical pickup apparatus, product by process."

Office Action, p. 6. It is respectfully submitted that as amended claim 1 recites that the load is configured to "dissipate energy transmitted through it as a result of a discharge in the gas discharge area". It appears that the configuration of the diode, resistor and Lp shown in Fig. 8B of Myers is configured such it is not for dissipating energy as a result of discharge in the gas discharge area. Indeed, it appears that Myers does not provide any clear identification number for, or discussion of, the resistor and diode shown Fig. 8B (the resistor and diode shown as being in parallel with the capacitor Cp). Based on the discussion provided in Myers at col. 13:5-21, regarding a resistor, it appears that the resistor referred to in the Office Action is used in connection with providing a biasing current. Further, the fact that the diode is positioned between resistor and the electrode 83 suggests that the resistor would not be such that discharge from the electrode 83, back through the inductor Lp, would be transmitted through the resistor which is in series with the diode. Thus, the resistor does not appear to be for dissipating energy transmitted through it as a result of a discharge in the gas discharge area as recited by claim 1. Thus, it is respectfully submitted that claim 1 is not anticipated, or obvious in view of Myers. It is further submitted that claims 2-15 are dependent from claim 1 and therefore patentable for at least the same reasons as claim 1.

In addition claim 3 recites that the resistor of the load has a value comparable to the wave impedance of the gas discharge electrical loop. This value for a resistance appears to be very different than what is described in Myers. For example, Myers at col. 13:5-21 appears to suggest that the resistor value is determined in connection with determining bias current values. Thus, it is respectfully submitted that claim 3 is patentable over Myers for this additional reason.

Claim 4 recites that the resistor has a value comparable to an active impedance of the gas discharge during a maximum discharge current phase. This appears to suggest a very different value for the resistor of claim 4 versus the resistor discussed in Myers at col. 13:5-21.

Claim 5 recites that the system includes cooling unit and the load is provided in the cooling unit. The Office Action refers to a number of different parts of Myers in connection with rejecting claim 5. For example, the Office Action refers to the gas circulation shown in Fig. 8A. While aspects of the Myers reference are not completely clear, it appears very unlikely that the diode and resistor of shown in Fig. 8B are actually located inside the gas discharge area with electrodes 83 and 84 and the gas circulation fan. Rather, the diode and resistor would likely be located outside gas discharge area, as is the capacitor Cp. In general most systems would try to minimize the introduction of unnecessary and possibility contaminating elements inside the gas discharge area. In fact, the Myers reference appears to specifically address the fact that the Capacitor Cp is located on top of the gas discharge area rather than inside it. For example, see Myers col. 15:66-16:1, stating: "The Cp capacitor is comprised of a bank of twenty-eight 0.59 nf capacitors mounted on top of the laser chamber pressure vessel." Further, this discussion suggest not only that the resistor and capacitor are not inside the gas discharge area, it also appears to show that these components are on the pressure vessel, rather than being inside the encapsulated volume with circulation oil, referred to in the Office Action. Indeed, there appears to be no discussion in Myers which suggests that the Capacitor CP, diode and resistor should be cooled. Thus, it is respectfully submitted that claim 5 is patentable over Myers for this reason as well. Claims 6 and 7 depend from claim 5 and are therefore respectfully submitted as being patentable over Myers for this additional reason as well.

Claim 16 was rejected under 35 USC §112. As shown above claim 16 has been amended to clarify the relationship between elements of the claim. Thus, it is respectfully submitted that this rejection is overcome in view of the amendment. Further, as shown in the above discussion claim 16 rejected under Myers for the same reasons as claim 1. As amended claim 16 recites that the resistor is configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area. As discussed above it is respectfully submitted that Myers does not appear to disclose such an element. Thus, it is respectfully submitted that claim 16 is patentable over Myers. Claims 17 – 19 depend from claim 16 and are submitted to be patentable over Myers for at least the same reasons as claim 16.

Claim 21 was rejected under 35 USC §112. As shown above claim 21 has been amended to clarify the relationship between elements of the claim. Thus, it is respectfully submitted that this rejection is overcome in view of the amendment. Further, as shown in the above discussion, claim 21 rejected under Myers for the same reasons as claim 1. As amended claim 21 recites that the resistor is configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area. As discussed above it is respectfully submitted that Myers does not disclose such an element. Thus, it is respectfully submitted that claim 21 is patentable over Myers. Claims 22--24 depend from claim 21 and are submitted to be patentable over Myers for at least the same reasons as claim 21.

Claim 25 was rejected under 35 USC §112. As shown above claim 25 has been amended to clarify the relationship between elements of the claim. Thus, it is respectfully submitted that this rejection is overcome in view of the amendment. Further, as shown in the above discussion claim 25 was rejected under Myers for the same reasons as claim 1. As amended claim 25 recites that the load is configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area. As discussed above it is respectfully submitted that Myers does not appear to disclose such an element. Thus, it is respectfully submitted that claim 25 is patentable over Myers. Claims 26—36 depend from claim 25 and are submitted to be patentable over Myers for at least the same reasons as claim 25.

Further it is noted that claims 27 and 28 recite elements relating to the value of the resistor, which as discussed above in connection claims 5 and 6, appears to be very different than the teaching of Myers, and thus these claims appear to be patentable over Myers for this additional reason.

Further claims 29 and 30 recite elements relating to cooling the said load which, as discussed above, is different than the Myers reference. Thus, for this additional reason it is respectfully submitted that claims 29 and 30 are patentable over Myers.

Independent claims 37-39 have each been amended, and as amended they are respectfully submitted as overcoming the §112 rejection. Further each of these claims now recites that there is either a load or a resistor which is configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area. Claims 40-45 depend from claim 39 are respectfully submitted to be patentable for at least the same reasons as claim 39.

Claim 46 was rejected under both §112 and §102, but it is noted that very little specific discussion or analysis was provided in connection with rejection of claim 46. These rejections with respect to claim 46 are respectfully traversed. Claim 46 is a method claim which recites in part charging a main storage capacitor, and discharging the main storage capacitor through a pulse compression circuit to a peaking capacitance. This peaking capacitance is recited as being coupled with discharge electrodes. The method further recites that there is a load coupled between the peaking capacitance and the discharge electrodes, and that dissipation through the load stabilizes the current through the electrodes. It is respectfully submitted that this claim defines the subject matter of the claim, and clearly shows the relationship between the elements. Further, as discussed above it appears that the resistor and diode of the Myers reference provide for a different function than dissipating energy as a result of a discharge through the electrodes. Thus, it is respectfully submitted that claim 46 is patentable over the Myers reference. Further, it is respectfully submitted that claims 47-49 depend for claim 46 and are patentable for at least the same reasons as claim 46.

Newly added claims 50-60 provide further claims which are directed to aspects of the invention. Claims 50 and 51 depend from claim 1. Claim 50 recites that the capacitance and the load are in series. Claim 51 recites that the capacitance and the load are in parallel.

Claim 52 specifically recites that the load operates to dissipate streamers generated by a glow discharge of the laser tube. It is respectfully submitted that such a load does not appear to be disclosed or suggested by Myers. Further, claims 55 and 56 recite values for a resistor which do not appear to disclosed or suggested by Myers. Claim 59 in combination with its independent claim and intervening claims recites a system having two fans, one fan for cooling the load, and second fan for circulating gas, which does not appear to be disclosed or suggested by Myers.

CONCLUSION

For the reasons set forth above, it is believed that all claims now present in this application are patentably distinguishable over the references. Therefore, reconsideration is requested, and it is requested that this application be passed to allowance.

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: March 20, 2003

By: ______________________
Brian J. Keating
Reg. No. 39,520

Attorneys for Applicant(s)

STALLMAN & POLLOCK LLP

Intellectual Property Attorneys

121 Spear Street, Suite 290
San Francisco, CA 94105

Telephone: (415) 512-1312
Facsimile: (415) 512-1362

TO:	Examiner Tuan N. Nguyen U.S. Patent & Trademark Office
FAX:	703-746-8592
PHONE:	703-605-0756
FROM:	BRIAN J. KEATING Telephone: (415) 512-1312 Ext. 104 Facsimile: (415) 512-1362 Email: bkeating@stallmanpollock.com
DATE:	May 19, 2003
TIME:	
PAGES:	10 (including cover)

If you did not receive all of the pages in this fax, please contact Georgia K. Stith at (415) 512-1312 Ext. 106.

OUR FILE NUMBER: LMPY-12310

RETURN TO: G. Stith

MESSAGE: U.S. Patent Appln. No. 09/838,715, filed April 18, 2003

Dear Examiner Nguyen:

As you requested earlier today, attached is an additional copy of the Appendix A to the Response to the Office Action Dated December 4, 2002, which was mailed to the USPTO on March 20, 2003. If you have any questions regarding the facsimile, please do not hesitate contact me.

Brian J. Keating (Reg. No. 39,520)

APPENDIX A

What is claimed is:

1. (Amended) A discharge circuit for a pulsed gas laser system, comprising:

a pair of electrodes wherein an area between said pair of electrodes defines a gas discharge area;

a capacitance and a load coupled to a first electrode of said pair of electrodes, said capacitance configured to store charge[; and] which is discharged through the electrodes, and the load configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area.

[a load coupled between said first electrode and said capacitance.]

2. The circuit of claim 1 wherein said load includes a resistor.

3. (Amended) The circuit of claim 2 wherein said resistor has a value comparable to a wave impedance of [said] a gas discharge [circuit] electrical loop.

4. The circuit of claim 2 wherein said resistor has a value comparable to an active impedance of the gas discharge during a maximum discharge current phase.

5. The circuit of claim 1 further including a cooling unit, said load provided in said cooling unit.

6. The circuit of claim 5 wherein said cooling unit is provided in a pulsed power module of a laser system.

7. The circuit of claim 5 wherein said cooling unit includes one of an air fan and an encapsulated volume with circulating oil.

8. (Cancel)

9. (Amended) The circuit of claim [8] 1 wherein said gas discharge area is configured to provide ionization of a laser gas during the charging of said capacitance.

10. The circuit of claim 1 wherein said capacitance includes a peaking capacitor.

11. The circuit of claim 1 wherein said pair of electrodes, said capacitance and said load form an electrical loop.

12. The circuit of claim 1 wherein said load includes an active load.

13. The circuit of claim 1 further including a power generator configured to provide power to said capacitance for charging said capacitance.

14. The circuit of claim 13 wherein said power generator includes a high voltage pulsed power generator.

15. The circuit of claim 1 further including a ground terminal coupled to said capacitance.

16. (Amended) A discharge circuit, comprising:

a pair of discharge electrodes, a region between said pair of electrodes defining a gas discharge region;

a peaking capacitor and a resistor coupled to said pair of discharge electrodes, said peaking capacitor configured to store charge which is discharged through the discharge electrodes, said resistor configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area;

[a resistor coupled between a first electrode of said pair of discharge electrodes and said peaking capacitor;] and

a ground terminal coupled to said peaking capacitor and a second electrode of said pair of discharge electrodes;

wherein said pair of discharge electrodes, said peaking capacitor and said resistor form an electrical loop.

17. The circuit of claim 16 further including a cooling unit for cooling said resistor.

18. (Amended) The circuit of claim [1] <u>16</u> further including a high voltage pulsed generator configured to provide power to said peaking capacitor.

19. The circuit of claim 16 wherein said gas discharge area includes high pressure laser gas.

20. (Cancel)

21. (Amended) A discharge circuit for use in a laser system, comprising:

a pair of discharge electrodes, an area between said pair of electrodes defining a gas discharge area;

a first peaking capacitance coupled to said electrodes, said first capacitor configured to store charge;

a second peaking capacitance different from said first peaking capacitance <u>and a resistor</u> coupled to one of said pair of electrodes, said second capacitor configured to store charge <u>which is discharged through the discharge electrodes, said resistor configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area</u>;

[a resistor coupled between said second peaking capacitance and one of said pair of discharge electrodes;] and

a ground terminal coupled to said first and second peaking capacitors;

wherein said pair of discharge electrodes, said first and second peaking capacitors and said resistor form an electrical loop.

22. The circuit of claim 21 further including a cooling unit for cooling said resistor.

23. The circuit of claim 21 further including a high voltage pulsed generator configured to provide power to said first and second peaking capacitors.

24. The circuit of claim 21 wherein said gas discharge area includes high pressure laser gas.

25. (Amended) A method of providing a discharge circuit for a pulsed gas laser system, comprising the steps of:

providing a pair of electrodes <u>with a gas discharge area between the electrodes;</u>

coupling a capacitance <u>and a load</u> to one of said pair of electrodes, said capacitance configured to store charge <u>which is discharged through the electrodes, and the load configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area.</u> [; and

coupling a load between said another one of said pair of electrodes and said capacitance.]

26. The method of claim 25 wherein said load includes a resistor.

27. (Amended) The method of claim 26 wherein said resistor has a value comparable to a wave impedance of [said] <u>a gas</u> discharge [circuit] <u>electrical loop</u>.

28. The method of claim 26 wherein said resistor has a value comparable to an active impedance of the gas discharge during a maximum discharge current phase.

29. The method of claim 25 further including the step of providing cooling said load.

30. The method of claim 29 wherein said step of cooling includes the step of providing either an air fan or an encapsulated volume with circulating oil.

31. [Canceled]

32. The method of claim 31 further including the step of providing ionization of a laser gas in said gas discharge area during the charging of said capacitance.

33. The method of claim 25 wherein said pair of electrodes, said capacitance and said load form an electrical loop.

34. The method of claim 25 further including the step of charging said capacitance.

35. The method of claim 34 wherein said step of charging includes the step of providing a high voltage pulsed power generator.

36. The method of claim 1 further including the step of coupling a ground terminal to said capacitance.

37. (Amended) A method of providing a discharge circuit, comprising the steps of:

defining an area between a pair of electrodes a gas discharge area;

coupling a peaking capacitor <u>and a resistor</u> to one of said pair of discharge electrodes, said peaking capacitor configured to store charge <u>which is discharged through the discharge electrodes, and the load configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area;</u>

[coupling a resistor between said another one of said pair of discharge electrodes and said peaking capacitor;] and

coupling a ground terminal to said peaking capacitor and said one of said pair of discharge electrodes;

wherein said pair of discharge electrodes, said peaking capacitor and said resistor form an electrical loop.

38. (Amended) A method of providing a discharge circuit for use in a laser system, comprising the steps of:

providing a pair of discharge electrodes, an area between said pair of electrodes defining a gas discharge area;

coupling a first peaking capacitor to said pair of electrodes, said first capacitor configured to store charge;

coupling a second peaking capacitor and a resistor to one of said pair of electrodes, said second capacitor configured to store charge which is discharged through the discharge electrodes, and the load configured to dissipate energy transmitted through it as a result of a discharge in the gas discharge area;

[coupling a resistor between said second peaking capacitor and said one of said pair of discharge electrodes;] and

coupling a ground terminal to said first and second peaking capacitors;

wherein said paid of discharge electrodes, said first and second peaking capacitors and said resistor forming an electrical loop.

39. (Amended) An excimer or molecular fluorine laser, comprising:

a discharge chamber filled with a gas mixture including a halogen component, the discharge chamber also including a pair of main discharge electrodes;

a pulsed discharge circuit coupled to the pair of main discharge electrodes;

[a plurality of electrodes including a pair of main discharge electrodes and at least one preionization electrode, said plurality of electrode connected to the pulsed discharge circuit for energizing the gas mixture; and

a resonator for generating a laser beam,]

wherein the pulsed discharge circuit [comprises:] includes:

a main storage capacitor coupled to a pulse compression circuit;

[a pulse compression circuit;]

a set of peaking capacitors coupled to [between] the pulse compression circuit and the main discharge electrodes, such that a charge is transferred from the pulse compression circuit and then stored in the set of peaking capacitors and then discharged in the main discharge electrodes; and

a resistive component coupled to [between] the set of peaking capacitors and the discharge electrodes, such that the resistive component dissipates energy transmitted through it as a result of a discharge between the main discharge electrodes.

40. (Amended) The laser of claim 39, further comprising a second set of peaking capacitors coupled to [between] the pulse compression circuit and the main discharge electrodes.

41. (Amended) The laser of claim 40, wherein a first electrical connection between the first set of peaking capacitors and the main discharge electrodes has a different inherent inductance than a second electrical connection between the second set of peaking capacitors and the discharge electrodes.

42. The laser of claim 39, wherein the resistive component includes a resistor.

43. The laser of claim 39, wherein the resistive component includes a resistor and a variable inductor.

44. The laser of claim 39, wherein the resistive component is coupled in series between the set of peaking capacitors and the discharge electrodes.

45. The laser of claim 39, wherein the resistive component is coupled in parallel with the set of peaking capacitors.

46. A method for providing an electrical pulse to discharge electrodes of an excimer or molecular fluorine laser, comprising the steps of:

charging a main storage capacitor of a pulsed gas discharge excitation laser system;

discharging the main storage capacitor through a pulse compression circuit to a peaking capacitance coupled with the discharge electrodes as an electrical pulse; and

dissipating the energy of the electrical pulse through the discharge electrodes and an additional load coupled between the peaking capacitance and discharge electrodes,

wherein the dissipation through the additional load stabilizes the current through the discharge electrodes.

47. The method of claim 46, wherein the discharging step includes discharging the main capacitor through a first peaking capacitance and a second peaking capacitance, wherein, of the first and second peaking capacitances, the additional load is coupled only between the first peaking capacitance and the discharge electrodes.

48. The method of claim 46, wherein the additional load is coupled in series between the peaking capacitance and the discharge electrodes.

49. The method of claim 46, wherein the additional load is coupled in parallel with the peaking capacitance.

50. (New) The discharge circuit of claim 1 wherein the capacitance and the load are in series.

51. (New) The discharge circuit of claim 1 wherein the capacitance and the load are in parallel.

52. (New) A pulsed gas laser system, comprising:

a laser tube including a first electrode and a second electrode and laser gas; and

a capacitance and a load coupled to the first electrode, wherein the capacitance is coupled to receive a charge from a pulse compression circuit, and to discharge the charge through the fist and the second electrode, and wherein the load operates to dissipate streamers generated by a glow discharge of the laser tube, wherein the capacitance and the load are located out of the laser tube.

53. (New) The system of claim 52 further comprising a cooling apparatus which cools the load.

54. (New) The system of claim 52 wherein the load includes a resistor.

55. (New) The system of claim 54 wherein the resistor has a value comparable to a wave impedance of said discharge circuit.

56. (New) The system of claim 54 wherein the resistor has a value comparable to an active impedance of the gas discharge during a maximum discharge current phase.

57. (New) The system of claim 52 wherein the load is positioned in the pulsed power module.

58. (New) The system of claim 52 wherein the cooling apparatus includes a first fan which is disposed outside of the laser chamber, and positioned to cool the load.

59. (New) The system of claim 58 further including a second fan disposed in the laser chamber for circulating laser gas in the laser chamber.

60. (New) The system of claim 52 wherein the load is encapsulated volume with circulating oil.